

REMARKS

Reconsideration and allowance of the above-identified Application in view of the above amendments and the following remarks are respectfully requested.

Claims 1-19 are pending in the Application. Claim 19 is newly added.

Applicants are pleased to note the Examiner has indicated that claims 4, 8, 9 and 13 would be allowable if rewritten in independent form. Accordingly, Applicants have rewritten allowable claim 9 in independent form as new claim 19. Therefore, Applicants respectfully submit that claim 19 is in form for allowance.

Claim rejections – 35 USC § 102

Claims 1-3, 5, 7, 10, 11, 12, 14 and 16-18 were rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi (U.S. Patent No. 6,040,894). Applicants respectfully traverse this rejection for at least the following reasons.

Claim 1 recites, *inter-alia*, “a controller having an input coupled to said detector and an output coupled to said illumination system, wherein the controller is configured to receive detected information from said detector and to provide a feedback to said illumination system to control a parameter of the illumination system.”

Claim 11 recites, *inter-alia*, “controlling an intensity distribution at the pupil plane by returning the intensity distribution measured across the auxiliary beam via a feedback loop.”

Takahashi merely uses detector 100 in conjunction with computing means 18 and display 19 to measure and display the intensity distribution on the pupil plane 14 of the projection system 13. Takahashi monitors the displayed intensity distribution and based on the result of the measurement, the light source 1 is adjusted by using adjusting mechanism T1 (see, col. 3, lines 56-65, col. 7, line 63 through col. 8, line 11 and Figure 6 of Takahashi). Therefore, the computing means 18 and display 19 are merely used to display the intensity distribution measured by detector 100. The computing means 18 of Takahashi does not have an output coupled to the illumination source 1 or to the adjusting means T1. The output of computing means 18 of Takahashi is only connected to display means 19. As such, Takahashi’s exposure apparatus does not provide a feedback (via a feedback loop) to the illumination source 1. Clearly, Takahashi does not disclose, teach or even suggest a

controller having an input coupled to a detector and an output coupled to an illumination system, wherein the controller is configured to receive detected information from the detector and to provide a feedback to the illumination system to control a parameter of the illumination system, as claimed in claim 1. The only output of Takahashi's controller is the display 19. Furthermore, Takahashi does not disclose, teach or suggest controlling an intensity distribution at the pupil plane by returning the intensity distribution measured across the auxiliary beam via a feedback loop, as claimed in claim 11. Consequently, Takahashi does not disclose, teach or suggest the subject matter recited in independent claims 1 and 11.

Therefore, Applicants respectfully submit that claims 1 and 11, and claims 2, 3, 5, 7, 10, 12, 14 and 16-18 which depend directly or indirectly from either claim 1 or claim 11, are patentable. Thus, Applicants respectfully request that the rejection of claims 1-3, 5, 7, 10, 11, 12, 14 and 16-18 under § 102(b) over Takahashi be withdrawn.

Claims 1-3, 5-7, 10-12 and 14-18 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shiozawa (U.S. Patent No. 5,684,567). Applicants respectfully traverse this rejection for at least the following reasons.

Shiozawa discloses an exposure apparatus which uses a half mirror 11 to split a light beam emitted by light source 1 into two light beams one of which passes through the half mirror 11 to reach detector 12 (see Figure 1 and related description in Shiozawa). The detector 12 of Shiozawa comprises a sensor array and receives the light transmitted through the half mirror 11 and monitors the quantity of light impinging on the reticle 14 and the shape of a secondary light source 10a formed adjacent to a light exit surface 9b of a third optical integrator 9 (see col. 4, lines 34-41 in Shiozawa). Shiozawa does not disclose, teach or even suggest a controller having an input coupled to a detector much less a controller having an output coupled to an illumination system, as claimed in claim 1. The detector 12 of Shiozawa is not connected to a controller.

Furthermore, Shiozawa does not disclose, teach or suggest controlling an intensity distribution at a pupil plane by returning an intensity distribution measured across the light beam reaching the detector via a feedback loop. Indeed, Shiozawa does not provide a feedback loop to control an intensity distribution at a pupil plane. Shiozawa merely uses the detector 12 to monitor the light distribution reaching the reticle.

Consequently, Shiozawa does not disclose, teach or suggest "a controller having an input coupled to said detector and an output coupled to said illumination system, wherein the

controller is configured to receive detected information from said detector and to provide a feedback to said illumination system to control a parameter of the illumination system,” as recited in claim 1. Furthermore, Shiozawa does not disclose, teach or suggest “controlling an intensity distribution at the pupil plane by returning the intensity distribution measured across the auxiliary beam via a feedback loop,” as recited in claim 11.

Therefore, Applicants respectfully submit that claims 1 and 11, and claims 2, 3, 5-7, 10, 12 and 14-18 which depend directly or indirectly from either claim 1 or claim 11, are patentable. Thus, Applicants respectfully request that the rejection of claims 1-3, 5-7, 10-12 and 14-18 under § 102(b) over Shiozawa be withdrawn.

CONCLUSION

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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